



Getting Started with the D0 (analysis) software

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Part 4

Contents

part 1 (8:15-9:00)

- ♦ D0 software black magic explained (those setup commands)
- ♦ Software versioning and CVS
- ♦ Understanding the directory structure of different packages
- ♦ How to build an executable
- ♦ The D0 software framework
- ♦ Framework RCP

part 2 (9:05-9:50)

- ♦ More on run control parameters (RCP)
- ♦ Understanding the RCP databases, problems with RCP files
- ♦ How to share data between packages (the EDM)
- ♦ What is the purpose of all those interfaces
- ♦ Event filtering
- ♦ Input/output
- ♦ Do and don't with the gmake command
- ♦ Using the doTools to run Do programs

Contents

part 3 (10:20-11:05)

- ♦ The D0ChunkAnalyze example
- ♦ Accessing some D0 physics objects from the chunks
- ♦ Writing "Elvis has just left the building" and "Elvis is dead"
- ♦ Filling histograms and ROOT tuples

part 4 (11:10-11:50)

- Other chunks
- Chunk documentation
- Trigger selection
- Stuff I wanted to cover, but didn't find time for it:
 - RTE
 - d0cuts
 - luminosity calculation and bookkeeping
 - np_tmb_stream
- Documentation
- Yes you can contribute.....

Provided you a very limited description of:

- EMparticleChunk partly done
- JetChunk
- MuonParticleChunk **documented !!**
- ChargedParticleChunk partly done
- MissingETChunk

What about all other chunks ?

- TauChunk **documented !!**
- CPSClusterChunk
- FPSClusterChunk
- BcJetChunk
- VertexCollChunk
- CalDataChunk
- L3Chunk (**E.Varnes did a lot of work !!!!**)
- L1/L2 ?
- Data quality ?

- MCKineChunk
- **in preparation**
- **?????**
- **d0_mcipp**

The list above implicitly assumed only chunks which will be available after unpacking the thumbnail, there is much more in the DST.

Chunk documentation project. See current status at:
<http://www-d0.fnal.gov/computing/algorithms/docs/chunks/index.html>

This should be a really high priority. We all need this documentation to be able to work with DST/thumbnails and improve our software. With a few days of work you can have a great impact....

My ideal documentation for each chunk:

- 1) the list of header files I need
- 2) an example of how to loop through all the objects in the chunk
- 3) for one object a list of all the methods, with a clear explanation of the physical quantity they give you.

How can you document the chunks ?

- ♦ You wrote the software and you know what it is doing
- ♦ You try to understand what is in the header files
- ♦ You help yourself with the XXAnalyze package

My experience is that with 2 days of work you can document 1 chunk.

It's time to figure out the winners of the various prizes....

The prize is: you document a chunk, then we'll see the prize

Event filtering and tagging based on triggers (using the TMB as input file)

- The analysis_utilities package contains (so far) only one program, which allows users to decode triggers in the TMB (p11 and p13), filter or tag events based on trigger conditions.
- To use this facility: add **RegD0TriggerFilter** to your **bin/OBJECTS** file.
- Default is: filtering on (but empty trigger list), tagging off.
- The trigger list can be filled with the command line options:
-fkwparams -filter_triggers=EM_HI,EM_HI_2EM5,...
(a list of triggers separated by a comma)

Documentation available at:

http://www-d0.fnal.gov/d0dist/dist/packages/analysis_utilities-devel/doc

The np_tmb_stream package (R.Hauser, A.Yurkewicz):

- very similar to analysis_example (developed in parallel)
- shares some functionality (trigger filtering)
- has additional facility for performing cuts on a few objects using RCP
- Used by NP working group

documented at

http://www-d0.fnal.gov/d0dist/dist/packages/analysis_utilities/devell/doc

The d0cuts package (H. Melanson)

- perform cuts on physics objects with a list of RCP, no need to recompile the code
- to be interfaced to analysis_example, not done for lack of time

Luminosity: clearly one thing missing from the example

Why ? Not enough time to work on it. The lumiID group (like any other algorithm group) would benefit a lot from your help

d0RTE: how to run D0 programs without having the full D0 environment (make a tar file of the executable, of the relevant RCPs and input data):

in the testing phase, David Ritchie needs feedback from developers...

<http://www-d0.fnal.gov/~ritchie/CPBdemo.html>

Pointers to other sources of documentation:

D0 algorithms web pages (H. Melanson):

<http://www-d0.fnal.gov/computing/algorithms>

In particular: **HOWTO section:**

<http://www-d0.fnal.gov/computing/algorithms/howto>

Framework documentation by G. Watts:

<http://d0.epe.phys.washington.edu/~gwatts/research/d0/howtos>

(*great page for learning how to use the debugger, Totalview*)

L3 documentation by E. Barnes (apologies for not having included it yet in analysis_example):

<http://newton.physics.arizona.edu/~varnes/L3Guide.html>